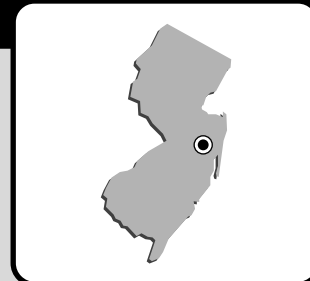


# LAKEHURST NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION

## LAKEHURST, NEW JERSEY

<b>Engineering Field Division/Activity:</b>	NORTHDIV
<b>Major Claimant:</b>	COMNAVAIRSYSCOM
<b>Size:</b>	7,382 Acres
<b>Funding to Date:</b>	\$27,996,000
<b>Estimated Funding to Complete:</b>	\$76,859,000
<b>Base Mission:</b>	Develops and tests weapons systems and their components
<b>Contaminants:</b>	Acids, fuels, PCBs, pesticides/herbicides, photographic chemicals, refrigerants, solvents, waste oils



<b>Number of Sites:</b>		<b>Relative Risk Ranking of Sites:</b>		
<b>CERCLA:</b>	45	<b>High:</b>	13	<b>Not Evaluated:</b> 0
<b>RCRA Corrective Action:</b>	0	<b>Medium:</b>	0	<b>Response Complete:</b> 24
<b>RCRA UST:</b>	0	<b>Low:</b>	8	<b>Total Sites:</b> 45
<b>Total Sites:</b>	45			

**NPL**

### EXECUTIVE SUMMARY

The Lakehurst Naval Air Warfare Center (NAWC) Aircraft Division is located in Jackson and Manchester Townships, Ocean County, New Jersey, 14 miles inland from the Atlantic Ocean. Lakehurst is 65 miles south of New York City and 50 miles east of Philadelphia, Pennsylvania. NAWC is bordered by Route 547 to the east, a military reservation to the west, woodland to the north and south. NAWC and the surrounding areas are within the Pinelands National Reserve, the most extensive undeveloped land tract of the Middle Atlantic Seaboard. There are rare, threatened, and endangered species within the Pinelands unique ecosystem.

NAWC covers 7,400 acres on an outer coastal plain, an area of gently rolling terrain and low relief. Drainage from NAWC discharges to several tributaries which flow into two major streams. The Ridgeway Branch runs along the northern border of NAWC and the Manapqua Brook along the southern border. Both streams flow into Pine Lake which discharges into the Toms River. Drainage of industrial areas is through a storm drainage system channeled primarily to the Ridgeway Branch.

NAWC was formerly named the Naval Air Engineering Center (NAEC), but was renamed Naval Air Warfare Center (NAWC) Aircraft Division in 1992. In January 1994, the facility was renamed Naval Air Engineering Station (NAES), but NAWC remains as a tenant of NAES.

The current mission is technology development and engineering. Past operations include the handling, storage, and on-site disposal of hazardous substances. There have been documented or suspected releases of hazardous substances into the environment. Historical records, aerial photographs, field inspections, and interviews, were used to identify 45 potentially contaminated sites. The primary contaminants are petroleum products in soil and volatile organic compounds (VOCs) in groundwater. The first Federal Facility Agreement (FFA) was signed between the Navy and the EPA in October 1989 for NAWC.

At the end of FY95, only one of the 45 sites at NAWC was in the Study Phase,

20 were in the cleanup phase and 24 sites were Response Complete (RC). For soil, sediment, and surface water, 39 of the 45 sites have been addressed and require No Further Action (NFA) for these media. Four areas are being treated for groundwater, one area is studying natural restoration for remediation, and three areas are undergoing monitoring. NFA Records of Decision (RODs) were signed for 27 sites prior to FY94.

Interim RODs were signed in FY91, to implement groundwater treatment at Areas C and H. The final RODs to continue groundwater treatment at Areas C and H and soil treatment systems at Sites 16 and 17 will be signed in FY96.

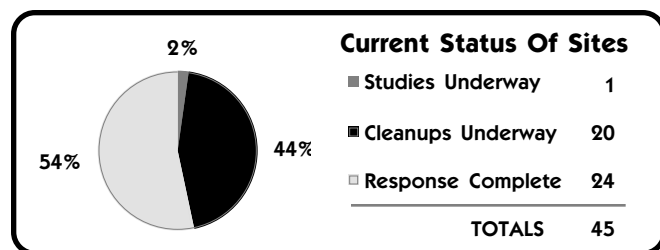
An interim ROD was signed in FY91, to implement groundwater treatment at Area E and in FY92 at Areas A and B. RODs for the final groundwater actions for Areas A, B and E will be completed by FY97.

A ROD for groundwater monitoring was signed in FY93 for Sites 1 and 31. An interim ROD to conduct a three year natural restoration study at Areas I and J was signed in FY95 with a final ROD at Areas I and J anticipated in FY99. A final ROD for Area K is scheduled for FY97. Anticipate final RODs for all sites by FY99.

A Technical Review Committee (TRC), established in 1987, includes the Navy, EPA, New Jersey Department of Environmental Protection (DEP), and the Pinelands Commission. The TRC meets monthly to discuss the status of the National Priorities List (NPL) sites. A Restoration Advisory Board (RAB) was established in November 1994. Meetings are held bi-monthly. A Community Relations Plan (CRP) was completed in 1988. An Information Repository is located at the Ocean County Library in Toms River, New Jersey.

Innovative technologies have been implemented at NAWC. Bioremediation was used successfully in 1983 and soil washing in 1988. Asphalt batching (combining contaminated soil with an emulsion to create a base for roadways) was used in 1994. The use of "passive soil gas survey" at Site 14, clarified the higher areas of contamination in a closed landfill. At Site 31, this technology was used in a wetlands area to indicate the extent of petroleum products contamination. NAWC created a Geographic Information System (GIS) that makes site data a manageable asset. NAWC is exploring the effectiveness of intrinsic bioremediation as a viable remedial option at a cost less than one-percent of pump and treat.

Several Navy environmental awards were received by NAWC: State Coordinator, New Jersey, 1990; Environmental Engineer of the Year, 1991; Environmental Team, 1992; and Pollution Prevention and Recycling, 1993. Other awards were Department of Defense (DOD) Environmental Showcase Installation, 1992 and the Al Gore Adopt-A-School Program, 1993.



## LAKEHURST NAWCAD RELEVANT ISSUES

### ENVIROMENTAL RISK



**HYDROGEOLOGY** - Groundwater represents the primary source of potable water supply in Ocean County. Groundwater pollution occurs at NAWC. Approximately 20" of rainfall is available per year to recharge the groundwater reservoir. This quantity of water moving down through the very permeable sands blanketing NAWC is a sufficient vehicle to carry pollutants to the groundwater. Once there, the lateral migration is also essentially uninhibited by the permeable sands. Surface runoff amounts to 5-10 inches annually and could readily transport surface pollutants from the bounds of NAWC.



**NATURAL RESOURCES** - NAWC overlies the Cohansey Sand, an important fresh water aquifer. There are five freshwater areas at NAWC; Bass Lake, Clubhouse Lake, Pickerel Pond, Island Pond, and Rainbow Pond. Many of the areas are used for recreational purposes. There are rare, threatened, and endangered species within the areas surrounding NAWC.



**RISK** - All 45 CERCLA sites were ranked using the Department of Defense (DOD) Relative Risk Ranking System. Thirteen sites were ranked high primarily due to groundwater contamination and also some soil contamination. There are both human and ecological receptors. Contaminants include solvents, gasoline and diesel fuels, fire fighting foam (FFF) and landfill debris. Eight sites were ranked low risk.

The Agency for Toxic Substances and Disease Registry (ATSDR) prepared a Preliminary Public Health Assessment in 1989. At that time, NAWC was considered to be of risk to human health due to the possibility of exposure to hazardous substances via contaminated groundwater, soil, sediment, and surface water.

In April 1992, an Endangerment Assessment (EA) for NAWC was conducted. Again, based on available information, NAWC was considered to be a potential public health concern because of the risk to human health due to the possibility of exposure to hazardous substances via contaminated groundwater, soil, sediment, and surface water.



**RESTORATION PROJECTS** - A Feasibility Study (FS) will be performed in July 1998 for Areas I and J, where a natural restoration study is currently underway.

### REGULATORY ISSUES



**NATIONAL PRIORITIES LIST** - The installation was placed on the National Priorities List (NPL) on 22 July 1987 with a Hazard Ranking System (HRS) score of 50.53. Placement on the NPL was due to groundwater contamination, as groundwater in the area is a source of potable water.



**LEGAL AGREEMENTS** - A Federal Facility Agreement (FFA) was signed by the Department of the Navy (DON) on 25 May 1989 and by the EPA on 4 October 1989.

No Further Action (NFA) Records of Decision (RODs) were signed for Sites 5, 15, 18, 19, 21, 23, 26, 27, 30, 34, 40, 44 and 45 and for Sites 2, 7, 9, 11, 12, 20, 22, 24, 33 and 35-39 prior to FY94.

Interim RODs were signed in February 1991, to implement groundwater treatment at Sites 10, 16, 17 (Area C) and Site 32 (Area H). Final RODs to continue groundwater treatment with modifications to improve system performance at Areas C and H and soil treatment systems at Sites 16 and 17 will be signed in February 1996.

An interim ROD was signed in September 1991, for groundwater treatment at Site 28 (Area E) and in March 1992, for groundwater treatment at Sites 13, 14, 29 and 42 (Areas A and B). Final RODs for Areas A and B and Area E are scheduled to be completed by FY97.

A ROD for groundwater monitoring was signed in FY93 for Sites 1 and 31. An interim ROD to conduct a three year natural restoration study at Sites 3, 6 and 25 (Areas I and J) was signed in January 1995 with a final ROD at Areas I and J anticipated in FY99. A final ROD for Sites 4 and 8 (Area K) is anticipated in FY97. NAWC anticipates final RODs for all sites by FY99.



**PARTNERING** - Partnerships were established with the United States Geological Survey (USGS), Rutgers University, the New Jersey Department of Environmental Protection (DEP), and the Pinelands Commission to study the use of composted biosolids to minimize disturbances that may occur during site recovery. These materials may be used for capping or fill material.

The NAWC Environmental Branch and a Manchester Township High School developed a summer science program called Research Methods in Ecology and Environmental Sciences. The program is designed to encourage and nurture student careers in science and ecology, while providing valuable information for NAWC. Students work side by side with environmental professionals on guided research projects.

### COMMUNITY INVOLVEMENT



**RESTORATION ADVISORY BOARD** - A Technical Review Committee (TRC) was established in FY87 and includes members of the Navy, EPA, New Jersey DEP, and the Pinelands Commission. The TRC meets monthly to discuss the status of the NPL sites. A Restoration Advisory Board (RAB) was established in November 1994. Meetings are held bi-monthly and "walk-ins" are encouraged. RAB meetings are advertised in the local newspaper and through posters displayed throughout the community. All members of the public are invited to attend.



**COMMUNITY RELATIONS PLAN** - A comprehensive Community Relations Plan (CRP) was completed in February 1988.



**INFORMATION REPOSITORY** - An Information Repository has been established at the Ocean County Library in Toms River, New Jersey. The Information Repository contains copies of all Administrative Records (official records), including minutes from TRC and RAB meetings.

**Ocean County Library**  
101 Washington Street  
Toms River, New Jersey 08753

## LAKEHURST NAWCAD HISTORICAL PROGRESS

### FY81

**Sites 1, 2, 15, 19, 22, 23, 26 and 30** - Removed stained and contaminated soils and removed drums, tanks and debris.  
**Site 11** - A Removal action for soils began.

### FY83

The Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), and a Confirmation Study (CS), equivalent to a Site Inspection (SI), identified 44 potentially contaminated sites at Lakehurst NAWC. Site 45, a former BOMARC missile site, was added to the list of potentially contaminated sites for further study. BOMARC is the responsibility of the US Air Force and is located on Fort Dix property.

### FY87

**All Sites** - The SI was completed and all sites were recommended for further study in the Remedial Investigation/Feasibility Study (RI/FS).  
**Sites 1-4, 6-14, 16, 17, 20, 22, 24, 25, 28, 29, 31-33, 35-39 and 42** - Phase II RIs were completed.  
**Sites 5, 15, 18, 19, 21, 27, 30, 34, 40 and 45** - An RI was completed.  
**Sites 15, 18, 27, 30, 34, 40 and 45** - The RI/FS phase was completed.

### FY91

**Sites 5, 19, 21 and 44** - Removal actions to remove contaminated soil were completed.  
**Sites 10, 16 and 17 (Area C Groundwater)** - Groundwater treatment began.

### FY92

**Site 29** - Drums were removed.  
**Sites 1, 6, 20 and 35** - Removal actions to remove stained and contaminated soils took place.  
**Site 28 (Area E Groundwater)** - An Interim Remedial Action (IRA) for groundwater treatment began. The design was completed in November 1991 and the action began in December 1992.  
**Area H** - An IRA for groundwater treatment began in May 1992.

### FY93

**Sites 1, 2, 11, 20, 35 and 38** - A Phase III RI/FS was completed.  
**Sites 11 and 35** - The RI/FS phase was completed.  
**Sites 3, 4, 6-9, 13, 14, 16, 22, 24 and 32** - A FS was completed.  
**Site 29** - More drums were excavated and removed.  
**Sites 1 and 38** - The FS phase was completed.  
**Sites 2, 20, 26, 36, 37, 39, 42 and 44** - The FS phase was completed.  
**Sites 3, 6, 14, 16 and 32** - The Remedial Design (RD) was completed.

### FY94

**Site 13** - The RD phase was completed.  
**Sites 6, 14, 16 and 32** - The final Remedial Actions (RAs) began.  
**Sites 3, 6, 14, 16, 29 and 32** - Soil removal was completed and soil was asphalt batched to construct new roads off base.  
**Sites 12, 23-25, 29, 31 and 33** - An FS was completed.  
**Sites 16 and 17** - The IRA for removal of contaminated soils was completed in October 1993 with confirmation sampling results March 1994. No Further Action (NFA) is expected at these sites after the IRAs are completed.  
**Areas A and B and Areas I and J** - IRAs for the groundwater involving pump and treat operations began and will continue for an undetermined length of time.

## PROGRESS DURING FISCAL YEAR 1995

### FY95

**Sites 13, 16 and 17** - An in-house design of bioremediation and vapor extraction systems was completed.  
**Sites 3 and 6 (Areas I and J)** - A revised Record Of Decision (ROD) was completed in January 1995 based on a March 1993 FS.

**Sites 10, 16, 17 (Area C) and for Site 32 (Area H)** - FSs were conducted in May 1995, to assess the performance of the interim groundwater and soil treatment actions at these sites.

## PLANS FOR FISCAL YEARS 1996 AND 1997

### FY96

**Areas C and H** - RODs for continued groundwater treatment are expected in February 1996. Plans to complete RDs for two areas of groundwater contamination in FY96 are expected.  
**Area K (Sites 4 and 8), Area E (Site 28) and Area A/B (Sites 13, 14, 29 and 42)** - FSs will be completed in July 1996. The FS will be similar to those conducted at Areas C and H in FY95.  
**Area E (Site 28)** - Plans to complete an RD for one bioventing/sparging system in FY96 to expedite the existing groundwater treatment is expected.

### FY97

**Site 41** - An FS will be performed.

## LAKEHURST NAWCAD PROGRESS AND PLANS

CERCLA	FY94 and before	FY95	FY96	FY97	FY98	FY99	FY00	FY01 and after
PA	45							
SI	43							
RI/FS	40	2	2					
RD	18				4	1		
RA	2							21
IRA	11(17)	1(1)	6(6)	11(11)	1(1)			
RC	22	2						21
Cumulative Response Complete	49%	53%						100%